

## CLAIMS

The invention claimed is:

1. A portable single platform geolocation method for determining a Doppler measurement set of a target of interest, comprising the acts of:

providing an electronic warfare aircraft having an aircraft expendables technology device on-board, within a signal range of the target of interest;

performing an initial frequency measurement of the target of interest via the electronic warfare aircraft;

tuning and programming a receiver in the aircraft expendables technology device based on the initial frequency measurement of the target of interest;

ejecting the aircraft expendables technology device from the electronic warfare aircraft into airspace within the signal of range of the target of interest;

determining a Doppler measurement set on the target of interest by the aircraft expendables technology device; and

transmitting the Doppler measurement set of the target of interest from the aircraft expendables technology device to the electronic warfare aircraft.

2. The portable single platform geolocation method according to claim 1, further comprising:

determining time and position references by the aircraft expendables technology device; and

transferring the time and position references from the aircraft expendables technology device to the electronic warfare aircraft.

3. The portable single platform geolocation method according to claim 2, further comprising utilizing the time and position references for determining a time difference of arrival measurement.

4. The portable single platform geolocation method according to claim 1, further comprising:

determining flight position and time tagged signal of interest data using the aircraft expendables technology device;

transferring the flight position and time tagged signal of interest data to the electronic warfare aircraft; and

performing time difference of arrival measurements on the time tagged signal of interest data by the electronic warfare aircraft.

5. The portable single platform geolocation method according to claim 1, further comprising re-tuning a receiver of the aircraft expendables technology device to a new target of

interest in response to at least one received signal from the target of interest.

6. The portable single platform geolocation method according to claim 3, further comprising slowing the descent of the ejected expendables technology device.

7. The portable single platform geolocation method according to claim 3, further comprising translating a frequency of the target of interest to a new carrier frequency.

8. The portable single platform geolocation method according to claim 7, wherein the new carrier frequency is 1 MHz or higher.

9. The portable single platform geolocation method according to claim 7, further comprising transferring the translated frequency from the aircraft expendables technology device to the electronic warfare aircraft.

10. The portable single platform geolocation method according to claim 9, further comprising:

determining a pilot frequency via the aircraft expendables technology device; and

transferring the pilot frequency from the aircraft expendables technology device to the electronic warfare aircraft.

11. The portable single platform geolocation method according to claim 10, further comprising providing a Doppler profile from a time interval via the pilot frequency from the aircraft expendables technology device to the electronic warfare aircraft.

12. The portable single platform geolocation method according to claim 11, further comprising providing the electronic warfare aircraft with a second Doppler data set via the translated frequency and the pilot frequency Doppler for an emitter contour calculation.

13. The portable single platform geolocation method according to claim 12, further comprising calculating the emitter contour calculation.

14. The portable single platform geolocation method according to claim 13, further comprising processing the translated frequency of the target of interest and the pilot frequency.

15. The portable single platform geolocation method according to claim 13, further comprising modulating a difference beat frequency between the frequency of the target of interest and the pilot frequency.

16. The portable single platform geolocation method according to claim 15, further comprising determining a pilot modulation frequency.

17. The portable single platform geolocation method according to claim 13, further comprising measuring a Doppler frequency shift between the initial frequency and a received frequency of the target of interest.

18. The portable single platform geolocation method according to claim 1, wherein the target on interest includes an aircraft.

19. The portable single platform geolocation method according to claim 18, wherein the aircraft is manned.

20. The portable single platform geolocation method according to claim 18, wherein the aircraft is unmanned.

21. A method of performing geolocation from a single platform comprising the acts of:

ejecting an aircraft expendable technology device from a first aircraft;

performing a first set of Doppler measurements using hardware disposed on said first aircraft;

performing at least a second set of Doppler measurements using hardware disposed on said aircraft expendable technology device; and

transmitting said at least a second set of Doppler measurements from said aircraft expendable technology device to said first aircraft.

22. The method as claimed in claim 21 further including the acts of:

performing an initial frequency measurement of a signal of interest by said first aircraft; and

tuning a receiver disposed within said aircraft expendable technology device to said signal of interest in response to said initial frequency measurement by said first aircraft.

23. The method as claimed in claim 22 wherein said act of performing said at least a second set of Doppler measurements

further includes translating said signal of interest to a new carrier frequency and transmitting said new carrier frequency to said first aircraft.

24. The method as claimed in claim 23 where said act of performing said at least a second set of Doppler measurements further includes transmitting an initial pilot frequency from said aircraft expendable technology device to said first aircraft.

25. The method as claimed in claim 24 further including the act of modulating said pilot frequency.

26. The method as claimed in claim 25 wherein said act of modulating said pilot frequency further includes modulating said pilot frequency with a difference beat frequency between said signal of interest and said initial pilot frequency.

27. The method as claimed in claim 26 wherein said first aircraft extracts a signal of interest Doppler profile by direct measurement of the modulated pilot frequency.

28. The method as claimed in claim 26 wherein said aircraft expendable technology device measures a Doppler

frequency shift between an initial signal of interest and a received signal of interest and transmits said Doppler frequency shift to said first aircraft.

29. The method as claimed in claim 21 further including the act of slowing the descent of said aircraft expendable technology device.

30. The method as claimed in claim 21, further comprising:  
determining time and position references by said aircraft expendable technology device; and

transferring said time and position references from said aircraft expendable technology device to said first aircraft.

31. The method as claimed in claim 30, further comprising utilizing said time and position references for determining a time difference of arrival measurement.

32. The method as claimed in claim 21, further comprising the feature of re-tuning a receiver of said aircraft expendable technology device to a new target of interest in response to at least one received signal from said target of interest.



33. A signal platform geolocation system comprises:

a first aircraft including a first COMS transponder and a first receiver, said first COMS transponder generating a first set of Doppler measurements; and

an aircraft expendable technology device releaseably secured to said first aircraft, said aircraft expendable technology device including a second COMS transponder and a first transmitter, wherein said second COMS transponder generates a second set of Doppler measurements and said first transmitter transmits data relevant to said second set of Doppler measurements from said aircraft expendable technology device to said first receiver of said first aircraft.

34. The system as claimed in claim 33 wherein said first aircraft includes a processor, wherein said processor generates an emitter contour based on said first set of Doppler measurements and said second set of Doppler measurements.

35. The system as claimed in claim 33 wherein said aircraft expendable technology device includes a time and position device.

36. The system as claimed in claim 33 wherein said first aircraft further includes a second transmitter, wherein said

second transmitter transmits a retuning signal to said aircraft expendable technology device.

37. The system as claimed in claim 33 wherein said aircraft expendable technology device further includes an air braking system.

38. The system as claimed in claim 33 wherein said aircraft expendable technology device includes a second processor that measures a Doppler frequency shift between an initially transmitted frequency and a received frequency of said signal of interest, and wherein said aircraft expendable technology device transmits data relevant to said Doppler frequency shift to said first aircraft.